

# 598-600 BLUE HILLS AVENUE REPORT



OCTOBER 7, 2014

Hartford Fire Department

Board of Inquiry Report

On the Fatal Fire of October 7, 2014

Date Report Issued: August 7, 2015

Fire Chief Carlos M. Huertas appointed a Board of Inquiry on October 8, 2014, to examine the circumstances of the fire that occurred October 7, 2014 at 598-600 Blue Hills Avenue. The fire resulted in the death of Firefighter Kevin Bell of Engine 16 A tour and the injuries sustained by Lieutenant John Moree of Engine 16, Firefighters Jason Martinez of Tactical Unit 1, Colin McWeeny of Engine 14, and Kevin Burke of Engine 5.

## **Board of Inquiry Members**

Deputy Fire Chief/Fire Marshal Roger S. Martin Jr.	Fire Marshal's Office
Deputy Chief Daniel Nolan	Training Division
Deputy Fire Chief Clifton Cooper	District 1 C Tour
Deputy Fire Chief David Serpliss	District 1 D Tour
Fire Lieutenant Rocco Fierravanti	Health and Safety Committee
Firefighter Vincent Fusco	Health and Safety Committee
Pump Operator Shelly Carter	EAP Liaison

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## **Scope of Report**

The Board of Inquiry was charged with determining, to the best of their ability, the facts and circumstances surrounding the fire that lead to the death of Firefighter Kevin Bell and the injuries to Lieutenant John Moree of Engine 16, Firefighters Jason Martinez of Tactical Unit 1, Kevin Burke of Engine 5, and Colin McWeeny of Ladder 3, during the period in which the Board was convened. The Board of Inquiry's findings and recommendations are based upon all information gathered during interview process, review of documents, incident recordings, and other agency's reports.

In instances where facts could not be determined with certainty, either due to conflicting information or differing viewpoints, hypothetical conclusions based upon those facts have been omitted from this report.

## **Executive Summary**

On October 7, 2014 at 1829 hours, a full box alarm assignment consisting of Engines 16, 14 and 7; Ladders 4 and 3; Tactical Unit 1 and District 2 were dispatched to 598 Blue Hills Avenue for a reported structure fire. Upon leaving their quarters at 636 Blue Hills Avenue, Engine 16 reported heavy smoke in the air. On arrival Engine 16 reported a 2½-story wood frame with “heavy smoke” and established incident command. Approximately four minutes later, Engine 16 reported, “Heavy Fire B side 2<sup>nd</sup> floor.” The assignment was upgraded to a working fire bringing two additional engine companies, Engine 5 as the Rapid Intervention Team (RIT) and Engine 2 as the Rehabilitation Unit, and District 1.

During the initial interior attack, Ladder 4 officer reported that conditions were rapidly deteriorating due to excessive heat and ordered his company to retreat off of the 2<sup>nd</sup> floor. During this time, firefighters from Engine 14 and Ladder 3 were hit with a hosestream while operating a 1¾” handline stretched to the 2<sup>nd</sup> floor apartment via the rear (“C” side) egress. Firefighter Jason Martinez, who was searching for hidden fire, lost his helmet and self-contained breathing apparatus (SCBA) mask after being struck by a hosestream. Firefighter Martinez retreated to a window on the “A” side, leaned out, and lost consciousness, falling two stories to the ground. The Incident Commander immediately ordered an evacuation of the building and upon a personnel accountability report (PAR), Firefighter Kevin Bell was reported missing and possibly still in the building. Engine 5, the assigned Rapid Intervention Team, was placed into service and, upon entering the second floor apartment, heard the alarm of Firefighter Bell’s personal alert safety system (PASS) device. Firefighter Bell was found unconscious and unresponsive, was removed from the building and attempts were made to revive him. Firefighter Bell was transported to Saint Francis Hospital by ambulance where he was declared dead.

Due to the events that occurred while operating at the Blue Hills Avenue fire, Firefighter Kevin Bell perished and Lieutenant John Moree and Firefighters Jason Martinez, Colin McWeeny and Kevin Burke sustained injuries.

Based on the findings resulting from the investigation of the Blue Hills Avenue fire, the Board of Inquiry has reached several conclusions and submitted recommendations that are contained at the conclusion of this report.

**Table of First Alarm Assignment**

Engine 16	Initial attack crew
Engine 14	Initial backup hoseline to Engine 16; Company was redeployed to the rear (C side)
Engine 7	Back up hoseline to E16
Tactical Unit 1	Initial primary SAR
Ladder 4	Initial Truck Company forcible entry and vented 2 <sup>nd</sup> floor
Ladder 3	Second due Truck Company forcible entry in rear of building and assisted Engine 14
District 2	Upon arrival assumes role as Incident Commander

**Table of Working Fire Assignment**

District 1	Upon arrival assigned as Safety Officer
Engine 5	Upon arrival assigned as Rapid Intervention Team
Engine 2	Responds with Rehabilitation Unit

## **Objectives of the Inquiry**

The objectives of the Board of Inquiry:

1. Identify and determine all factors that directly or indirectly led to the line-of-duty death of Firefighter Kevin Bell and to the injuries sustained by Lieutenant John Moree and Firefighters Jason Martinez, Colin McWeeny, and Kevin Burke. The investigation shall address any deficiencies or failures of apparatus, equipment, protective clothing, standard operating procedures, supervision, training, or performance.
2. Identify and implement recommendations from this investigation to prevent future incidences by improving the safety and efficiency of Department operations.



## **Guidelines and Documents**

1. Firefighter Line-of-Duty Death and Investigation Manual – International Association of Firefighters
2. Guide for Investigation of Line-of-Duty Death – IAFC Health and Safety Committee
3. Hartford Fire Department Directive 2.42 Investigative Procedures Involving Critical Injuries or Line of Duty Deaths
4. Hartford Fire Department Directives Numbered: 2.2 Rapid Intervention Team, 2.12 Radio Communication, 2.25 Incident Command System Procedure, 2.26 Incident Safety Officer, 2.31 Thermal Imaging Cameras, 2.36 Emergency Evacuation of Hartford Fire Department Personnel from Recognized Life Threatening Circumstances & Subsequent Account of Personnel, 2.43 Self-Contained Breathing Apparatus, 2.44 Personal Protective Equipment, 2.64 Fire Company Training Data Management, 2.66 Personnel Accountability Report, and 2.70 MAYDAY.

## **Inquiry Methodology**

At the initial meeting of the Board of Inquiry it was determined investigation of numerous subject specific functions would be required to achieve the Board's objectives. The Board assigned primary responsibility for specific subject matter to the member most qualified in that discipline. Within each subject matter specialty, Board members were requested to identify the facts and circumstances that impacted the Blue Hills Avenue fire. Additionally, Board members were charged with presenting their findings and recommendations for inclusion in this report.

Subject specific functions were assigned to the members of the Board of Inquiry as follows:

- Building Information & National Fire Protection Association (NFPA) Codes assigned to Fire Prevention Deputy Chief Roger Martin
- Training Documents assigned to Fire Training Deputy Chief Daniel Nolan
- Personal Protective Equipment (PPE) & Hartford Fire Department Directives assigned to Firefighter Vincent Fusco
- Timeline of Incident assigned to Lieutenant Rocco Fierravanti and Pump Operator Shelly Carter
- Fire Operations/Interviews assigned to Deputy Fire Chiefs Clifton Cooper and David Serpliss
- Summary/Findings/Recommendations assigned to all board members

Upon completion and review, the totality of finding and recommendations were incorporated into the final report.

During the course of this investigation, the following sources were reviewed by the Board:

1. Interviews of thirty-four Fire Department members who were working and on scene of the fire
2. Emergency Services & Telecommunications Department audio recordings for the 598 Blue Hills Avenue incident
3. Building plans and records for 598 Blue Hills Avenue
4. State of Connecticut Fire Safety and Prevention Codes
5. Building construction texts and documents for 598 Blue Hills Avenue
6. Photographs of 598 Blue Hills Avenue structure
7. Fire Department personnel's personal protective equipment
8. Hartford Fire Department Directives (DD)
9. Hartford Fire Department Incident Management System (IMS)
10. Firefighting operations
11. Fire behavior within confined/concealed areas

12. National Fire Incident Reporting System (NFIRS) Report for the 598 Blue Hills Avenue incident
13. National Institute of Occupational Safety and Health (NIOSH) SCBA report
14. Walkthrough of the fire scene at 598 Blue Hills Avenue

Upon completion of the examination and analysis of the aforementioned items, a timeline was established and was used to reconstruct the events leading up to the injuries to firefighters and the death of Firefighter Bell.

Based on this methodology, the findings and recommendations of the Board were developed. Therefore, it is the opinion of this Board of Inquiry, that the recommendations stated in this report be given the highest importance and be implemented in the most judicious manner. These recommendations are designed to prevent a reoccurrence of an incident of this type.

## **Building Information**

The building is a two-story structure of wood frame construction built in 1953 and is classified under the Building and Fire Codes as a Residential R-3, One and Two Family residential Occupancy. It has a finished basement whose entrance is on the east or rear of the building (“C” side). Entrance to the first floor is located via the front door on the west side (“A” Side) and also the rear (“C” side) of the building. Entrance to the second floor was via a stairwell whose entrance was on the “A” side northwest corner up a flight of twelve stairs. At the second floor landing, were two doors. The first door was directly in front of the landing on an interior wall parallel to the “A” side and the second door was located on the north wall of the landing on an interior wall parallel to the “D” side. It was observed that the “A” side door directly had no doorknob, only a keyed-type deadbolt. The building is equipped with natural gas heat and 100 amp overhead electrical services for the dwelling units.

A search of the Department of Licenses and Inspections database returned the following records:

- A permit was applied for and granted for the residing of the exterior.
- An application was made to reclassify the structure from an R-3, One and Two Family, to an R-2, Apartment Building. Apartment buildings pursuant to the Fire Code are those that contain three (3) or more dwelling units. This application was denied by the Planning and Zoning Division and no further action was taken.

## **Fire Origin and Cause Investigation**

Pursuant to Connecticut State Statutes and upon a mutual agreement with the Hartford State's Attorney Office, the fire's official origin and cause investigation is being conducted by the Connecticut State Police's Fire and Explosion Investigation Unit (FEIU).

Based on interviews with fire personnel on the scene of the incident as well as video shown on numerous media outlets, this Board can, with a high degree of confidence, determine that the fire originated on the second floor, in a room on the "B/C" or northeast corner, self-vented out two windows and extended up the exterior wall into the attic space via the eaves and soffit vents.

## Fire Operations

Based upon statements given to this Board and the review of NFIRS report 14-0280045, the following operations took place on October 7, 2014. Note: The times referenced in this section are an elapsed time format starting with 00:00 at time of dispatch.

A full assignment (Engines 16, 14 and 7; Ladders 4 and 3; Tactical Unit 1 and District 2) was dispatched to 598 Blue Hills Avenue for a reported structure fire at 1829 hours. Upon leaving quarters, Engine 16, the first due engine company, reported heavy smoke in air.

At the 02:20 minute mark, Engine 16 arrived on scene, gives the initial report of a 2½ story wood frame with “heavy smoke” and establishes incident command.

At the 03:55 minute mark, Engine 16 confirms, “Heavy fire ‘B’ side 2<sup>nd</sup> floor.” Engine 16 stretches 1¾” uncharged handline to front entrance and waits for Ladder 4 to force entry to the door leading upstairs to the second floor. Ladder 4, the first due ladder company, forces the 1<sup>st</sup> floor entry door and proceeds to the second floor via the stairwell where they encounter a second locked door which requires additional forcible entry. Both Engine 16 and Ladder 4 stated that there was heavy smoke in the hallway leading up to the second floor limiting their visibility.

Acting Assistant Chief Terry Waller arrived on scene at the 04:23 minute mark of the incident and chose not to assume any role in the Incident Management System.

At the 06:57 minute mark, Ladder 3, the second due truck, reports the following to District 2, who is still enroute to the scene, “Need a line up back.”

In response to acknowledgement by District 2, Deputy Chief James McLoughlin, Ladder 3 Captain Theodore Borowski further states at the 07:36 minute mark, “Right up the back step, clear right to the back door. Got fire showing on the exterior. Can go right in back door.”

At the 07:47 minute mark, District 2 redirects Engine 14, the second due engine, to take their 1¾” hoseline from their position in front of the building backing up Engine 16, to the rear of the building. Engine 7, the third due engine, stretches their 1¾” hoseline to the front door to back up Engine 16.

At the 07:51 and 8:50 minute marks, Engine 16 Pump Operator Juan Rodriguez asks if they need their line charged to which Engine 16 Lieutenant John Moree replied, “negative.”

At the 8:00 minute mark of the incident, District 2 arrives on scene and assumes the role of Incident Commander (IC).

At the 9:55 minute mark, Engine 16 reports to District 2, that entry still had not been made to second floor dwelling unit. Engine 14 with the assistance of Ladder 3 has advanced their hoseline to the second floor rear and requests that the line be charged at the 09:59 minute mark. Ladder 3 is now performing a primary search and ventilation tasks in the second floor kitchen. Engine 16 makes entry into the second floor dwelling unit and states that the conditions were hot with zero visibility.

At the 11:27 minute mark, 1:28 minutes after Engine 14 requested their line to be charged and is placed into operation, Engine 16 Lieutenant Moree asks for their hoseline to be charged and directs his pipe man, Firefighter Kevin Bell, to direct the stream towards the ceiling to cool off the room. Ladder 4 Lieutenant Frederick Turner follows Engine 16 into the dwelling unit, reports similar heat and visibility conditions and begins a right hand search on his knees.

At the 12:20 minute mark, Ladder 3 reports to the Incident Commander that Engine 14 is putting water on the fire. Tactical Unit 1 had made their way to the second floor through the rear and enters through the kitchen past Engine 14 and Ladder 3. Tactical Unit 1 traveled towards the “A” side of structure and began to pull the ceilings to search for and expose any hidden fire.

The Incident Commander confirms that Ladder 4 was operating on the second floor and asks for primary report at the 13:34 minute mark. Ladder 4 makes it to the “A” side of the building and opens up the first window to provide ventilation. At this time Ladder 4 Lieutenant Turner reports conditions rapidly deteriorated due to excessive heat and orders his company to retreat off the second floor.

During this time, Tactical Unit 1 Firefighters Jason Martinez, Bryan Riddick and Timothy Mathis report while pulling ceilings they were struck by a hose stream originating from the “A” side of the structure. Firefighter Mathis reported that after being struck with the hose stream he became separated from his team but was able to exit the building through the rear (“C” side)

egress. Firefighter Riddick reported he was struck by the hose stream in the face and chest, the force of which resulted in him being momentarily disorientated and becoming separated from Firefighter Martinez. Firefighter Riddick was able to locate the crew of Engine 14 and assisted them with securing their hoseline which had become loose. Lieutenant Scott Cunningham and Firefighter Colin McWeeny of Engine 14 reported being struck with a hose stream originating from the north side (“A” side) of the structure. Lieutenant Cunningham stated that the force of the hose stream knocked off his helmet and dislodged his SCBA facepiece. Due to zero visibility in the room, he was unable to retrieve his helmet but was able to re-don his facepiece. Firefighter McWeeny was struck with the hose stream which knocked off his helmet and dislodged his SCBA regulator. He was unable to locate his helmet due to zero visibility but was able to reattach the SCBA regulator to his facepiece. He reported being struck by the hose stream a second time with enough force that his SCBA regulator was again dislodged. He was again able to reattach his SCBA regulator but became disoriented. Lieutenant Cunningham stated that Firefighter McWeeny became disoriented, dazed, confused and needed assistance exiting the structure. The Incident Commander was notified that Firefighter McWeeny was in need of medical attention and he was transported to the hospital for further evaluation.

Firefighter Jason Martinez stated he was struck with a hose stream originating from the “A” side which impacted him directly in the face and knocked him down. He believes that he lost consciousness for a period of time. Upon regaining consciousness, he reported that he was unable to locate his helmet and SCBA facepiece. He reported that it was extremely hot and his head and eyes were burning. He attempted to wet his gloves and utilize the water to cool his head. He stated he was completely disoriented and was unable to locate any other firefighters in his vicinity. He searched for and located the “A” side window that Ladder 4 had previously vented and cleared out the frame. He communicated with firefighters outside of building who stated they were bringing a ladder to him. However, he states that he again lost consciousness and eyewitnesses report that he tumbled out of the second floor window and fell to the ground. Firefighters quickly removed him to a safe area, medical treatment was initiated, an EMS crew was summoned and he was transported to St. Francis Hospital. Firefighter Martinez sustained burns to his head, ears, neck, shoulder and wrist. While not documented on the audio recordings of the incident, the Board has determined with a high degree of confidence that Firefighter Martinez fell from the second floor window at the 16 minute mark.



At the 16:16 minute mark Incident Commander, Deputy Chief James McLoughlin, ordered all companies out of the structure.

Engine 16 Lieutenant John Moree stated while they were operating on the second floor, Firefighter Kevin Bell's SCBA vibralert alarm had activated, indicating only 25% of his SCBA air cylinder volume remained. Lieutenant Moree informed Firefighter Bell they would be exiting the structure to change his air cylinder. Lieutenant Moree turned around and followed the hoseline back towards the door expecting Firefighter Bell to follow. When Lieutenant Moree discovered that Firefighter Bell was not behind him, he reversed direction and followed the hoseline to the nozzle. Engine 16's nozzle was not flowing water and there was no sign of Firefighter Bell at end of the hoseline. Lieutenant Moree left the nozzle to conduct a search of the room for Firefighter Bell and transmitted a mayday message. Audio recordings of the incident confirm the following radio transmission was made at the 15:57 minute mark, "Mayday, mayday" followed by a subsequent sentence which was unintelligible. The radio transmission was muffled and of a very low volume. After searching the room, Lieutenant Moree stated he transmitted a second mayday message which cannot be confirmed by the audio recordings of the incident. At no time was the mayday transmission acknowledged by the Incident Commander, the Safety Officer or by Fire Alarm. In fact, all department personnel that were interviewed stated they did not hear any mayday messages being transmitted over the radio at any time during the incident. Lieutenant Moree stated that his SCBA vibralert started going off and he followed the hoseline out of the structure. Upon exiting the structure, Lieutenant Moree stated that Firefighter Martinez was already on the ground being attended to. Lieutenant Moree stated that while conducting his search for Firefighter Bell he sustained burns to his ears.

At the 18:00 minute mark, the Incident Commander made several attempts to reach Engine 16 by radio to verify that they were out of the building with no response.

At the 19:06 minute mark, the Incident Commander requested a personal accountability report (PAR) check from Engine 16 with no response. Over the next 3½ minutes, Lieutenant Moree tried to locate Firefighter Bell with no success.

At the 21:51 mark, Deputy Chief Shapiro attempted to locate Firefighter Bell via the radio with no success.

At the 24 minute mark, the RIT team consisting of Engine 5 and Tactical Unit 1 went to second floor with a charged hoseline to locate Firefighter Kevin Bell. **Note: 8 minutes and 3 seconds had passed between Lieutenant Moree transmitting the mayday message and the RIT being deployed into the structure.** Within 20 seconds, RIT officer, Engine 5 Lieutenant William Brady stated, “We have a man down at the top of the stairs, right side...” Lieutenant Brady stated that the thermal imaging screen “whited out” upon entry to the second floor but he could hear Firefighter Bell’s personal alert safety system (PASS) device sounding just to the right of the entry door. RIT members found Firefighter Bell and attempted to remove him to the stairwell. Initially, Firefighter Bell could not be removed as his leg was entangled in a piece of wrought iron furniture. Once Firefighter Bell was disentangled by the RIT, he was immediately carried out of building to waiting EMS personnel. Firefighter Kevin Bell was found unconscious with his SCBA air cylinder empty and with his facepiece fully intact and seated on his face. All Firefighter Bell’s personal protective equipment, including his helmet, was in place. He did not appear to have sustained any burn injuries. Firefighter Kevin Bell was transported to St. Francis Hospital where he was declared dead in the line of duty.

After the fire was brought under control, Engine 5 was reassigned from RIT to perform overhaul duty in the fire room. While in the bedroom wetting down hot spots, Firefighter Kevin Burke fell after getting tangled in the box spring. He was not hurt but later began to feel light headed. Lieutenant Brady escorted him outside where he was evaluated by EMS. Both his pulse and blood pressure was elevated and as a result, he was transported to St. Francis Hospital for further evaluation. Firefighter Kevin Burke was cleared to return to duty later in the evening.

## **Fire Tactics and Strategies**

The Hartford Fire Department utilizes an aggressive interior attack strategy to locate and extinguish fires within structures. The tactical objectives for this strategy are:

1. Life Safety by way of search and rescue of occupants, crew cohesion, continual communications and updates to and from interior crews, and emergency egress for interior suppression crews.
2. Incident Stabilization through aggressive interior attacks, ventilation, and overhaul for hidden fires;
3. Property Conservation through rapid extinguishment, salvage and overhaul.

The initial tactical objectives for a structure fire of this type should have been as follows: the first due engine, Engine 16 was to make entry to the fire room for extinguishment. The second due engine, Engine 14, was to back up Engine 16 with a second hoseline and with first due ladder, Ladder 4, to perform forcible entry and ventilation. Tactical Unit 1 is to perform the primary search. The second due ladder, Ladder 3, is to perform ventilation, whether inside or by going to the roof and cutting a hole for vertical removal of smoke/gases. The third due engine, Engine 7 was to deploy a third handline as directed by the Incident Commander. District 2 assumes command upon arrival and District 1 serves as the incident Safety Officer. The strategy is to make entry; find the seat of the fire; attacking from the unburned portion of the structure towards the origin; ventilate to remove toxic gases and smoke to improve conditions, conduct a primary search for victims and extinguish the fire.

Based upon a thorough review of interviews and reports the following occurred:

- Entry to the fire apartment was delayed by locked and secured entry doors on the first level and on the 2<sup>nd</sup> floor stairwell;
- Car 2, the Interim Assistant Chief, did not assume command as first Chief Officer to arrive on scene;
- District 2 directed operations prior to arriving on-scene;
- The second handline was redeployed to the rear (“C” side) of building for fire suppression;
- Due to delay of forcible entry into the fire apartment, the first due hoseline was never deployed to the seat of the fire;

- Vertical ventilation was not performed which resulted in untenable conditions occurring on the fire floor;
- Engine 14 applied water onto what they believed to be the seat of the fire but was in fact the glow of the fire emanating from the fire room;
- Engine 16 operated their hoseline outside of the fire room causing other companies to be struck with the hose stream which resulted in injuries to several firefighters;
- A mayday was transmitted by a company officer that went unheard and unacknowledged, resulting in improper mayday/rescue procedures that delayed the prompt and timely deployment of RIT;
- The Incident Commander allowed opposing handlines to be in operation causing members to be struck with hose streams;
- Due to the improper wearing of PPE, helmets were knocked off and burns occurred due to chinstraps not fastened and ear flaps not down;
- Communications between the Incident Commander and interior units did not provide information on conditions and activities occurring within the structure.
- Emergency evacuation procedures were not adhered to.

## **Personal Protective Equipment**

The SCBA air packs utilized by Firefighters Kevin Bell and Jason Martinez were secured and turned over to the National Institute for Occupational Safety and Health (NIOSH) for examination. The following conclusions were noted in NIOSH's Investigation Report dated December 4, 2014:

1. Firefighter Bell's air pack failed the Remaining Service Life Indicator Test. The secondary alarm bell failed to operate within parameters. The secondary bell activated at 1026 psig, 9 psig below the minimum requirement of 1035 psig.
2. Firefighter Jason Martinez's air pack failed the NIOSH Positive Pressure Test. Additionally, the air cylinder was not properly labeled to indicate the most recent hydrostatic test. With regards to the failure of the positive pressure test, NIOSH stated the wearer would have been unable to discern a difference.
3. The deficiencies noted in the report did not contribute to either the death of Firefighter Kevin Bell or to the injury of Firefighter Jason Martinez.

All firefighter's turnout gear passed inspection and functioned as designed. The improper wearing of helmets resulted in the burns to individuals with and without structural firefighting hoods.

Firefighter Kevin Burke's injury was determined to be exhaustion.

## **Training**

A review was conducted of the records and the following was found:

1. All members are trained to the Firefighter I level;
2. All members are trained to the appropriate level of the National Incident Management System (NIMS);
3. All members have been trained in the proper use of PPE, pre-use inspection and in the on duty inspection of SCBA;
4. Company level training was conducted in the review of firefighting essentials, EMS protocols, and Department Directives;
5. No annual live fire training has been conducted outside of recruit training;
6. No proper thermal imaging camera (TIC) training was conducted;
7. No department wide mayday training was conducted;
8. No department wide RIT or firefighter survival training was conducted;
9. No formal or ongoing training for Suppression Officers regarding strategy and tactics was conducted;
10. No developmental training for firefighters regarding strategy and tactics was conducted.

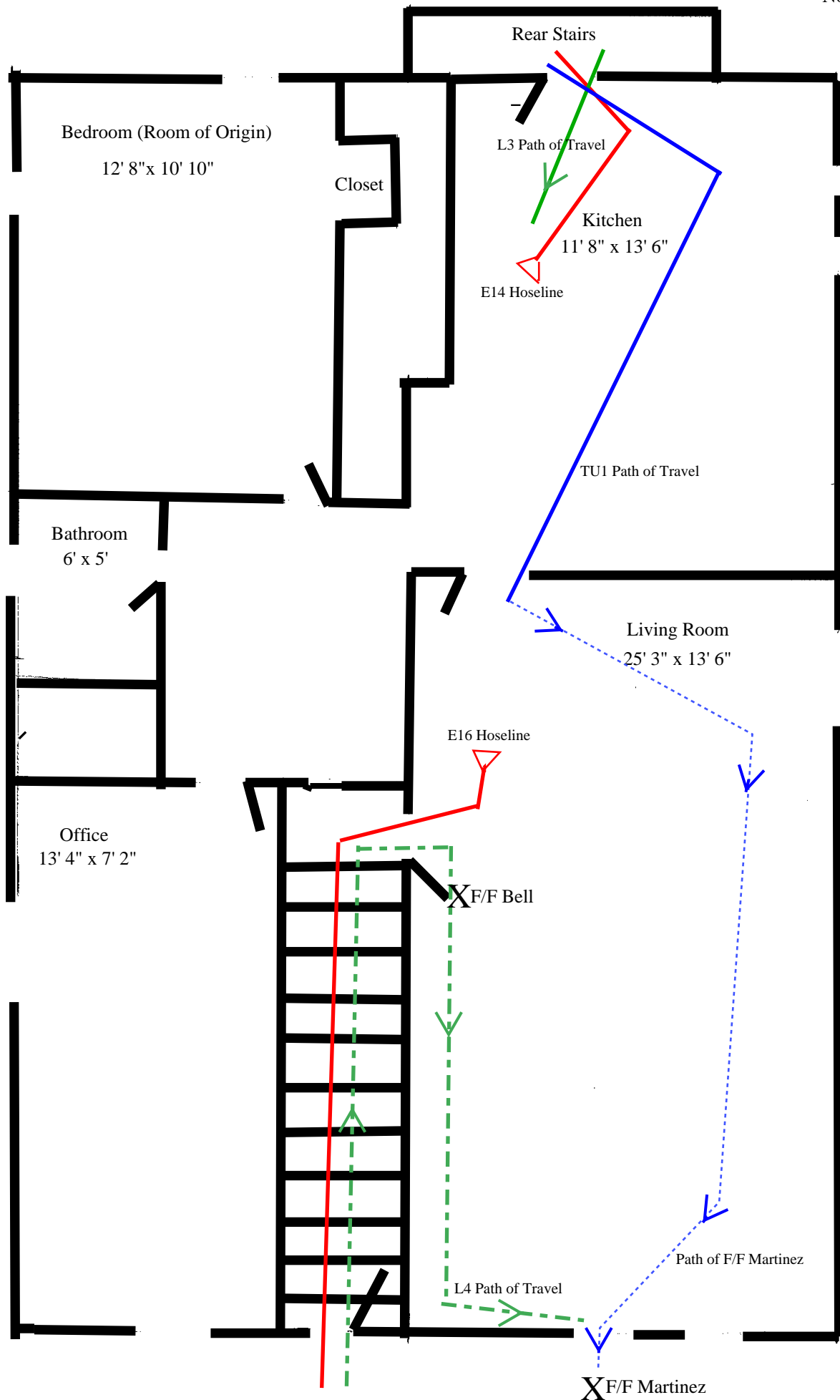
## **Photographs and Diagrams**

Photographs of the building and scene were done by the CSP FEIU and will not be released until their investigation is closed and a final report issued. The diagrams are based data gathered on a walkthrough of the structure and interviews with Department members on scene during the incident.

# 598-600 Blue Hills Ave 2nd Floor

Dimensions are L x W

Not to Scale





## **Conclusions of the Board of Inquiry**

The Board of Inquiry has identified a number of direct and indirect factors that potentially contributed to the LODD of Firefighter Kevin Bell and the injuries sustained by Lieutenant John Moree, Firefighter Jason Martinez, Firefighter Colin McWeeny and Firefighter Kevin Burke. These factors include the following:

1. Lack of a formal training program for newly appointed Deputy Chiefs.
2. Lack of understanding of when it is appropriate for Chief Officers, i.e. Chief of the Department, Assistant Chiefs, to assume command at an incident and seamlessly integrate within the NIMS structure as appropriate.
3. Time delay associated with forcible entry of doors in zero visibility environments with limited space.
4. Underutilization and/or lack of proper use of thermal imaging cameras at structure fires to assist with forcible entry, searches, locating seat of fire, overhaul, etc.
5. Failure to recognize the need for vertical ventilation in timely manner.
6. Lack of understanding in regards to utilization of hose streams to cool down thermal layering of room in conjunction with appropriate ventilation techniques.
7. Improper utilization of hose streams into smoke instead of locating the seat of the fire.
8. Lack of use of helmet chin straps and ear flaps.
9. Improper implementation of Mayday Directive.
10. Lack of basic radio discipline in regards to ensuring your transmission is received and acknowledged.
11. Lack of crew integrity in regards to working in teams of at least two.
12. Failure to perform a proper search of the room for missing firefighters and not requesting additional resources to search the room in a timely manner.
13. Failure to communicate with the incident command in regards to current status of assigned tasks.
14. Lack of personal self-rescue equipment.
15. Failure to immediately ladder the structure and provide a secondary means of egress.
16. Inability of firefighters to maintain composure under adverse conditions.
17. Failure to implement PAR directive in efficient manner.
18. Deficiencies in regards to fire ground communications.

19. Lack of residential structure fire directive (SOP) which clearly delineates the responsibilities of various companies
20. Lack of reserve/spare equipment, i.e. Thermal Imaging Cameras.
21. Lack of understanding with regard to fire stream management.
22. Failure to properly implement the evacuation directive.

## **Board of Inquiry Recommendations**

Based on a methodical and thorough review of the documents, interviews, and findings, the Board of Inquiry has developed the following recommendations that shall be implemented to prevent future incidents:

1. The Hartford Fire Department shall develop a comprehensive training program for newly promoted officers, including Deputy Chiefs, Captains, and Lieutenants, covering all aspects of their duties prior to them reporting for duty. Additional curriculum for current officers shall be developed to maintain skills, and improve the ability to manage and mitigate all types of emergency incidents.
2. The Hartford Fire Department shall develop a comprehensive training program for all firefighters who will be tasked with acting officer responsibilities.
3. The Hartford Fire Department shall conduct ongoing firefighting training to review and enhance basic and advanced skills, tactics, and strategies.
4. The Hartford Fire Department shall develop a training program, both classroom and practical, for thermal imaging cameras (TIC) in which department members can become proficient in the use of thermal imaging cameras for various applications including structure fires, missing person searches and hazardous material incidents, etc.
5. Thermal imaging cameras must be classified as essential equipment and a minimum of three thermal imaging cameras should be a part of a reserve/spare inventory in case of breakdowns. A thermal imaging camera replacement program should be enacted to upgrade to new technologies and replace cameras prior to the end of their functional lifespan.
6. The Hartford Fire Department should reorganize the Suppression Division and add a third District staffed with a Deputy Chief and Aide. The third arriving Deputy Chief will assume the role of Safety Officer. The Fire Chief or an Assistant Chiefs upon arrival at the scene of an incident shall assume the role of Incident Commander. The previous Incident Commander will clear the scene and make their District available to handle additional incidents. Deputy Chiefs assigned to the Operations and Safety Officer functions of the IMS shall remain in their roles.
7. The Hartford Fire Department should immediately conduct a study to determine what type of radio system will work best for the fire department emergency operations which enhances

safety at incident scenes. There are too many instances in which transmissions are not being heard on incident scenes.

8. The Hartford Fire Department must purchase self-rescue equipment for each individual firefighter as previously agreed upon (4 years ago) and provide the associated training needed for each member to be proficient in utilizing that equipment.
9. The Hartford Fire Department must provide firefighter survival training for all Suppression Division personnel.
10. The Hartford Fire Department shall provide live fire training for department members that allows for Suppression Division personnel to remain proficient in the following areas: hoseline deployment, hose stream management, search and rescue, fire ground communications, horizontal and vertical ventilation, self-rescue techniques, Rapid Intervention Team deployment and techniques, proper ladder deployment, forcible entry, and incident scene management.
11. The Hartford Fire Department shall complete RIT training for the entire department.
12. Hartford Fire Department must emphasize that all firefighters, regardless of rank, have a responsibility to correctly wear all personal protective equipment (PPE) as designed and instructed to provide maximum safety at incident scenes.
13. The Hartford Fire Department shall develop a comprehensive Department Directive (Standard Operating Procedure) for Residential Structure Fires.
14. The Hartford Fire Department shall review and adjust Department Directives pertaining to the Incident Command System, Investigative Procedures Involving Critical Injury or Line of Duty Deaths, Mayday, and PAR (personnel accountability reports).
15. The Hartford Fire Department shall enforce all Department Directives, policies and practices, and hold supervisors accountable for those that fail to follow said Directives, policies and practices.
16. Cease the practice of promoting between Divisions without ascending through lower ranks of that Division.
17. Identify and provide improvements in technology and capabilities for SCBA, increase inventory of SCBA air cylinders, and improve the ability of the Hartford Fire Department to refill air cylinders.

18. Confirmation EMS units responding to working fires as a priority call and at the Paramedic level.
19. Develop department policy on Critical Incident Stress Management.

## Appendix A – Timeline Narrative

TIME	EVENT
00:00 is Dispatch	
00:12	Companies (E-16, E-14, E-7, L-4, L-3, TAC 1 Dist 2) Dispatched to 598 Blue Hills Ave, Structure Fire, 2 <sup>nd</sup> floor. "We have smoke showing". <b>"Female who lives there is not home."</b>
01:39	Companies announce they are en-route
02:03	E-16 reports "heavy smoke in the air"
02:12	District 2 "Start a 4 <sup>th</sup> Engine Fire Alarm"
02:20	E-16 arrives and reports a "2 ½ story wood frame with "heavy smoke showing."
02:30	E-16 establishes Command
02:32	Dispatch sends E-5 as 4 <sup>th</sup> engine.
02:51	E-7 en-route
03:20	E-16 "Tell HPD we're laying across the road"
03:31	Car 2 is "on the air"
03:55	E-16 to District 2 – "Heavy fire rear B Side 2 <sup>nd</sup> floor. District 2 acknowledges.
04:00	District 2 – "Make it a working fire Fire Alarm" Fire Alarm acknowledges Working Fire.
04:08	L-4 on scene.
04:14	E-14 on scene. E-16 Hydrant to E-16 "Ready when you are."
04:23	Car 2 reports "On Scene."
04:28	"L-3 to L-4 ..."
04:30	E-5 en-route
04:51	"L-3 to L-4 ..."
04:58	E-16??? – "L-4 Came in off Blue Hills."
05:01	District 2 to Fire Alarm – "Get the 5 <sup>th</sup> Engine and 2 <sup>nd</sup> Deputy rolling"
05:08	"Water Coming, Water Coming" (Probably E-16 Hydrant.)
05:16	District 1 en-route
05:23	E-2, District 1 Disptached
05:57	L-3 Arrival
06:00	District 1 - "Who is 4 <sup>th</sup> Engine?" Fire Alarm Answer -"E-5"
06:10	Fire Alarm – "You want E-5 to be rehab District 1?"
06:18	E-2??? - Unreadable transmission (taking the rehab??)
06:33	District 1 – "E-5 is RIT Have E-2 grad the Rehab" Fire Alarm tells E-2 they are rehab. (Open Carrier: background noise: Tower ladder setting up??)
06:45 -	"E-14 Hydrant – charge it when you are ready."
06:50	"I am opening up now"
06:57	L-3 to Command – "we need another line in back."

07:04	District 2 – “E-14, Where is line going”
07:08	“L-3 Roof to L-3 .....”
07:13	L-3?? - Unreadable transmission
07:17	Sound of Tower Ladder?? Setting up
07:22	E-14 to District 2 “We’ve got our line at the front door backing up E-16 do you want us to go around back?”
07:27	Tac 1 on scene
07:34	District 2 – “L-3 where do you need that line?”
07:36	L-3 - “Right up back steps. It’s clear right to the back door. We got fire showing on the exterior. We can go right in the back door.”
07:47	District 2 – “10-4, 14 is coming around the rear.” E-14 responds “10-4”
07:51	“E-16A to E-16 do you want water yet” E-16 answers “negative” On SCBA air
08:00	District 2 On Scene assumes Command, Reports – “We got a 2-story wood frame, We got heavy fire on the B/C Side, All hands operating.” (Background: yelling / Tower Ladder setting up??)
08:37	Unreadable transmission
08:50	“E-16A to E-16 do you want water yet” E-16 answers “negative” On SCBA air
09:05	E-16 Hydrant to E-16, “Where are you guys located?”
09:13	E-16 answers, “16 Hydrant First floor Stairwell” On SCBA
09:30	Command to E-7 “get a line in the front door behind E-16” E-7 “Already done Chief, heading in”
09:55	E-16 – “Need someone to open door??? Right now we’re in stairwell” Command – “What do you need” E-16 “Nothing we’re working on it.” <i>This member of E-16 is on SCBA air.</i>
09:59	E-14 to E-14 Driver – “Charge the line” (This is in the rear)
10:06	E-5 “5s On Scene - Assuming RIT”
10:26	??? “There’s a Hydrant – Let me know when you need water”
10:40	Unidentified Transmission
11:07	Unidentified Transmission
11:18	Command to E-16 “Did you make entry yet?”
11:27	E-16 “Affirmative” Then E-16 has some unreadable messages (Charge their line??).
11:57	Command to E-14
12:06	L-3 to Command for E-14
12:15	Command to L-3 – “Go ahead”
12:20	L-3 reports “We’re hitting the fire from the Back, from the Charlie side, E-14 is hitting it.”
12:23	Command – “Message received”
12:32	Command to L-4
13:05	Unidentified Transmission
13:18-	Command to L-4, Are you on 2 <sup>nd</sup> floor?
13:33	L-4, “Yes we are on number 2.”

13:34	Command – “Alright – Give me a primary report.”
13:38	L-4 – “We copy????”
13:58	Unidentified Transmission – Radio Feedback
14:00	Command – “16, You Got your line on the fire?”
14:05	Unidentified Transmission
14:10	Unidentified Transmission – Radio Feedback
14:22	Unidentified Transmission – Radio Feedback
14:28	Command to E-14. E-14 Answering
14:35	Command – “E-14, Did you make the fire room?” No answer.
14:40	Unidentified Transmission – Radio Feedback
14:47- 14:49	Unidentified Transmission – Radio Feedback
15:13	??? – “Lookout,Lookout???” with Radio Feedback
15:17	Unidentified Transmission
15:25 - 40	Command to E-7, “Did you make it in there???” E-7 “Just on....on front porch/door Chief???”
15:57	<b>“MAYDAY MAYDAY, ???, Command, Mayday, Were on our line”???</b> <b>(Very Faint Broken Transmission)</b>
16:04	Open Transmission - someone says “Get them out of there.”
16:06	“Command to L-4.”
16:16	<b>“Command to all units, Command to all units, Bail out, All Units Come Out of The Building Now”</b>
16:27	Unidentified Transmission
16:37- 16:40	Radio Feedback “L-3 Roof – get down back stairs???”
16:43 – 17:10	“District 1 to Dispatch, All units out of the building, 10-10 on scene Priority One.” “Send Them to front of the building.” Multiple unreadable transmissions during this timeframe
17:11	Command to E-14 E-14 Answers Come Out of the Building
17:20	Command to all companies – “Out of the Building Right Away”
17:30	District 2 to Fire Alarm Fire Alarm Answers
17:41- 17:54	Multiple Unit Mixed Transmissions (Fire Alarm, D-2, D-2A,[L-3 on SCBA]) “L-3” “3 Answering” “Can you start” “everybody out” “10 seconds” “Tell all companies to come out of building?”
18:00	“Command to E-16,” No answer.
18:10	“Command to E-16,” No answer.
18:15	District 2 to Fire Alarm Fire Alarm Answers



	"Can You check the status of the 10-10, have them step it up"
18:20	Command "E-16 – Get out of the building Right Away, Out."
18:33- 18:36	Open Transmission - Pass device sounding????
18:44	L-3 to Firefighter Smith
18:46- 18:52	Fire Alarm to District 2 "917 should be on scene" District 2 Answers "OK 10-4 I see them"
18:55- 19:00	Command to E-14 E-14 has PAR
19:06	Command to E-16 "need a PAR Check"
19:26	E-16 "16B?" reports ....????
19:37	Command to E-7
19:37	Fire Alarm from Car 2 Fire Alarm answers Car 2 "Can you have the 10-10 come up Boothbay St. to Blue Hills"
19:49	District 2 "Engine 14"
19:51	E-16 "16 Firefighter Bell"
19:56	E-14 "14 Answering Command"
20:09	E-16 "16 to Command ??? for Firefighter Bell"
20:21	L-3 to 3 Roof and Irons, "Come to the back."
20:38	District 2 to 2A
20:45	E-16 – "Do you have PAR?"
20:54	E-7 "E-7 to 7 Driver charge that red cross lay Danny"
21:00- 21:26	District 2 asks Fire Alarm for a 2 <sup>nd</sup> "10-10 to Blue Hills Avenue" Background Transmissions: E-7 request Line to alley, Hydrant requested to be charged, Fire Alarm and District 2 discuss 10-10
21:11	E-16 "16 to 16 Pipe Firefighter Kevin Bell Report"
21:45	Command to E-14. "meet me in the front"
21:49- 21:59	L-3 Roof "3 Roof to 3 Driver where are you" There are multiple ongoing transmissions during this time frame District 1 "District 1 to 16 Pipe"
22:00	L-3 "L-3 to command we've 14s line on the exterior hitting fire"
22:25	District 2 Fire Alarm "make it a 2 <sup>nd</sup> Alarm".
22:45	District 2 asks TAC Unit to meet them in the driveway of the building.
22:52	District 2 asks L-4 Bucket if they can get the roof opened up
23:07	District 1 "16s where are you" E-16 answers "Changing my bottle" District 1 "What floor were you operating on".
23:15	Someone asks, "What floor are we going to?" Someone answers "Got to the top of the stairs and to the right."
23:45	District 1 to District 2) "I need you to go back into the building"
24:00	District 2 answers, "I got the Tac and Eng 5 going in with a line."
24:20	E-5 "We have a man down at the top of the stairs." Pass device can be heard in background.

25:00	Dist 2 - "E-5 were you able to make it down?"
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## **Appendix B – Glossary of Terms**

Aerial – A term used to describe a ladder truck. The hydraulically powered ladder permanently affixed to a ladder truck.

Apparatus – The general Fire Service term for a motorized vehicle used for emergency response. They include Engine Co, Ladder Co, Rescue Co, and others.

Initial Attack Crew – Members who arrive first and deploy handline into the burning building.

Backup Line – used to backup or assist Initial Attack Crew. Normally 2<sup>nd</sup> due Engine Co.

Board of Inquiry (BOI) – The seven member body, appointed by the Fire Chief responsible for investigating the fatal fire at 598-600 Blue Hills Ave.

Bunker gear – The protective clothing worn by firefighters. This clothing is a three part system. The outer coat and pants shell are manufactured using Nomex, a fabric resistant to very high temperature. The clothing also contains a vapor barrier and thermal liner.

Cockloft – A void space between the roof and the ceiling. This space is often made of combustible material and may be continuous from one occupancy to another.

Cylinder – A high pressure air cylinder (4500 psi) that connects to the SCBA and provides approximately 15 - 20 minutes of breathing air.

Department Directive (DD) – Issued by the Chief of the Department in agreement with the Joint Health and Safety Committee and considered written orders in effect until specifically withdrawn, superseded, or suspended.

District 1 – The radio call sign for the Deputy Fire Chief in charge of District 1

District 2 – The radio call sign for the Deputy Fire Chief in charge of District 2

Engine 2 – The radio call sign for Engine Company 2

Engine 5 – The radio call sign for Engine Company 5

Engine 7 – The radio call sign for Engine Company 7

Engine 14 – The radio call sign for Engine Company 14

Engine 16 – The radio call sign for Engine Company 16

Engine Company – Fire apparatus that carries 500 gallons of water, 2700 feet of hose, 1500 gpm pump, EMS equipment and personnel.

Facepiece – The mask type attachment that fits over the head of a firefighter and connects to the SCBA air supply regulator

Fire Explosion Investigation Unit (FEIU) – A section of the CT. State Police who assists the local Fire Marshal's Office in investigating and determining the cause of fires and explosions.

Heads up Display (HUD) – A series of colored lights displayed to the firefighter while wearing his SCBA facepiece. These lights indicate the amount of air pressure remaining in the SCBA.

Hydrant man – A Firefighter assigned to an Engine company who connects a supply line from a hydrant to the Engine upon arrival.

Incident Command System (ICS) – A systematic tool used for the command, control, and coordination of emergency response such as fires, motor vehicle accidents, and other emergencies.

Incident Commander (I/C) – The person who assumes overall command and control of all personnel and equipment at an emergency. This person will change as the incident escalates and higher ranking personnel arrive

Ladder 3 – The radio call sign for Ladder Company 3

Ladder 4 – The radio call sign for Ladder Company 4

Ladder Company – A fire apparatus that carries an elevated aerial platform, extension ladders, power and hand tools, forcible entry and extrication tools, EMS equipment and personnel.

National Fire Protection Association (NFPA) – A Codes and Standards consensus making body that develops and publishes minimum equipment standards for the fire service.

National Institute of Occupational Safety and Health (NOISH) – Approves self- contained breathing apparatus [SCBA] for use by firefighters.

National Institute of Standards and Technology (NIST) – Conducts research on the performance of firefighting equipment. Performs computer modeling to predict fire growth and smoke spread.

National Incident Management System (NIMS) – Is the systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work together seamlessly and manage incidents involving all threats and hazards—regardless of cause, size, location, or complexity—in order to reduce loss of life, property and harm to the environment.

Officer - A general term used to denote a firefighter that has been promoted to Lieutenant or Captain rank.

Personnel Accountability Report (P.A.R.) – A visual check and verbal report to the Incident Commander of each company member's location after the order of evacuation is given.

Personal Alert Safety System (PASS) – This piece of emergency equipment, worn by firefighters, combines a motion sensor with an emergency alarm. If the device does not detect any motion for more than 30 seconds, it emits a 95 decibel alarm.

Pipe – A nozzle at the end of a hoseline.

Pipe man – A member of the hose team, this lead firefighter carries the nozzle, with hose attached, into the building. This firefighter operates the nozzle on the fire.

Pump Operator – A Firefighter assigned to an Engine company responsible for connecting the supply line to the pump and then supplying and maintaining adequate water and pressure to hoseline's and other apparatus if needed .

Pounds per Square Inch Gauge (Psig) – A measurement of air pressure in cylinder.

Rehabilitation Unit – A vehicle that provides physical rest by allowing body to recuperate from the demands of hazards of the emergency operations and for medical monitoring by EMS personnel.

Rapid Intervention Team (RIT) – A team of firefighters whose sole function is to locate and rescue missing or trapped firefighters.

Roof man – A Firefighter assigned to the roof upon arrival. This firefighter's function is to provide roof ventilation to release flammable and toxic gases for the interior crews. Usually places a hole in the roof, and opens vents and skylights.

Self-Contained Breathing Apparatus (SCBA) – The equipment the firefighter carries on his back to supply breathing air. This includes the air cylinder, regulator, and face piece.

Standard Operating Procedure (SOP) – A set of fixed instructions and/or steps for carrying out routine operations

Size up – The initial situation evaluation of the emergency.

Tactical Unit 1 – The radio call sign for Tactical Unit 1

Tactical Unit – The apparatus and crew specialized in in various types of search and rescues and carries specialized extrication and rescue equipment.

Vibralert – A component of the SCBA that vibrates and alerts the wearer that air pressure is at or below 25% capacity.

Wood-frame Type V Construction – A building in which exterior walls, bearing walls, beams, girders, trusses and roofs are entirely constructed of wood.